

Name _____

Date _____

201 2.5 Extra Practice

State the reason why the following statements are true.

1. Add If $AB = BC$, then $AB + OR = BC + OR$.
2. Subtr. If $AB = BC$, then $AB - OR = BC - OR$.
3. Add If $5x - 7 = 23$, then $5x = 30$.
4. Add If $y - 19 = 21$, then $y = 40$.
5. Div If $7x = 91$, then $x = 13$.
6. Div If $49 = 147x$, then $1/3 = x$.
7. Subtr If $2x + 6 = x - 2$, then $x + 6 = -2$.
8. Mult. If $m\angle A = 40$, then $3 \cdot m\angle A = 120$.
9. Transitive If $m\angle A = m\angle B$ and $m\angle B = m\angle C$, then $m\angle A = m\angle C$.
10. Subst. If $\frac{1}{2} WY = \frac{1}{2} RT$, and $RS = \frac{1}{2} RT$, and $WS = \frac{1}{2} (WY)$, then $WS = RS$.
11. Mult If $m\angle 2 = m\angle 1$, then $5 \cdot m\angle 2 = 5 \cdot m\angle 1$.
12. Add If $AB = CD$, then $AB + BC = BC + CD$.
13. Subst If $m\angle 1 + m\angle 2 = 180$ and $m\angle 1 = m\angle 3$, then $m\angle 3 + m\angle 2 = 180$.
14. Transitive If $m\angle 4 = m\angle 3$, and $m\angle 3 = m\angle 5$, and $m\angle 5 = m\angle 1$, then, $m\angle 4 = m\angle 1$.
15. Subs. If $m\angle 5 + m\angle 6 = 90$ and $m\angle 6 = m\angle 3$, then $m\angle 5 + m\angle 3 = 90$.
16. Subs If $\frac{1}{2} AB = \frac{1}{2} CD$, and $EF = \frac{1}{2} AB$, then $EF = \frac{1}{2} CD$.
17. Transit If $m\angle ABC = m\angle 1$ and $m\angle 1 = m\angle GHK$, then $m\angle ABC = m\angle GHK$.
18. Symmet If $RS = DW$, then $DW = RS$.
19. Reflexive $AC = AC$.
20. Reflexive $m\angle D = m\angle D$.
21. Transitive If $m\angle A = m\angle D$ and $m\angle D = m\angle E$, then $m\angle A = m\angle E$.
22. Transitive If $CE = BA$ and $BA = \frac{1}{2} (BD)$, then $CE = \frac{1}{2} (BD)$.

Possible Reasons:

Addition,
Subtraction,
Multiplication,
Distributive,
Reflexive,
Symmetric,
Transitive,
Substitution,
Division,
Def. of midpoint,
Def. of \angle bisector

23. Symmetric If $WR = PQ + 2ST$, then $PQ + 2ST = WR$.
24. Subst If $AB + BC = BC + CD$, and $AC = AB + BC$,
and $BD = BC + CD$, then $AC = BD$.
25. Subst If $m\angle 4 + m\angle 5 = 90$ and $m\angle 3 = m\angle 4$, then
 $m\angle 3 + m\angle 5 = 90$.
26. Symm If $80 = m\angle A$, then $m\angle A = 80$.
27. Transitive If $RS = TU$, and $TU = YP$, then $RS = YP$.
28. Div If $7x = 28$, then $x = 4$.
29. Subtr If $VR + TY = EN + TY$, then $VR = EN$.
30. Subst If $m\angle 1 = 30$ and $m\angle 1 = m\angle 2$, then $m\angle 2 = 30$.
31. Symm If $m\angle 1 = m\angle 2$, then $m\angle 2 = m\angle 1$.
32. Subst If $m\angle 1 = 90$ and $m\angle 2 = m\angle 1$, then $m\angle 2 = 90$.
33. Transit If $AB = RS$ and $RS = WY$, then $AB = WY$.
34. Mult If $AB = CD$, then $\frac{1}{2} AB = \frac{1}{2} CD$.
35. Subst If $m\angle 1 + m\angle 2 = 110$ and $m\angle 2 = m\angle 3$,
then $m\angle 1 + m\angle 3 = 110$.
36. Reflexive $RS = RS$
37. Add If $AB = RS$ and $TU = WY$, then $AB + TU = RS + WY$.
38. Transitive If $m\angle 1 = m\angle 2$, and $m\angle 2 = m\angle 3$, then
 $m\angle 1 = m\angle 3$.

39. Complete the following proof:

Given: $8x - 5 = 2x + 1$
Prove: $x = 1$

Statements	Reasons
1. $8x - 5 = 2x + 1$	1. <u>Given</u>
2. $-5 = -6x + 1$	2. <u>Subtr</u>
3. $-6 = -6x$	3. <u>Subtn</u>
4. $1 = x$	4. <u>Div</u>
5. $x = 1$	5. <u>Symm</u>

40.

Complete the proof of the following algebraic equation:

$$\frac{2a-4}{3} = 8.$$

Statements	Reasons
1. $\frac{2a-4}{3} = 8$	1. Given
2. $3\left(\frac{2a-4}{3}\right) = 3(8)$	2. Multiplication
3. $2a-4 = 24$	3. Substitution
4. $2a = 28$	4. Addition
5. $a = 14$	5. Division

41. Given: $\frac{2}{3} + n = 9 - \frac{1}{4}n$

Prove: $n = \frac{20}{3}$

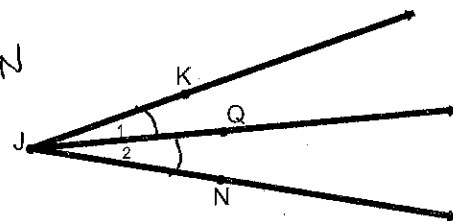
Statements	Reasons
① $\frac{2}{3} + n = 9 - \frac{1}{4}n$	① Given
② $12\left(\frac{2}{3} + n\right) = 12\left(9 - \frac{1}{4}n\right)$	② Multi.
③ $8 + 12n = 108 - 3n$	③ Subst.
④ $15n = 100$	④ Add + Subtr
⑤ $n = \frac{20}{3}$	⑤ Division

State the conclusion that can be drawn from the given information. Give the reason for each conclusion.

42. Given: \overrightarrow{JQ} bisects $\angle KJN$.

Conclusion: $\angle 1 \cong \angle 2$ or $\angle KJQ \cong \angle QJN$

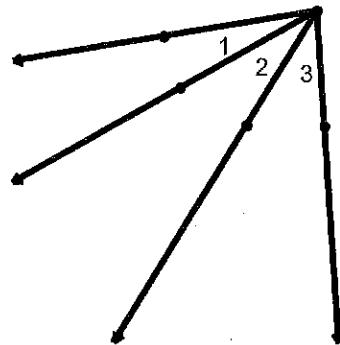
Reason: Def of Angle Bisector



43. Given: $m\angle 1 = m\angle 2$; $m\angle 2 = m\angle 3$

Conclusion: $m\angle 1 = m\angle 3$

Reason: Transitive



44. Given: M is the midpoint of \overline{AB} .

Conclusion: $AM = MB$

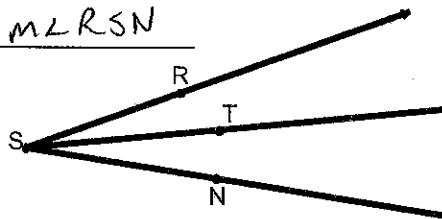
Reason: Def of midpoint



45. Given: diagram

Conclusion: $m\angle RST + m\angle TSN = m\angle RSN$

Reason: Angle Addition Postulate



46. Given: Diagram

Conclusion: $AB + BC = AC$

Reason: Segment Addition Postulate



Complete the statement so that the given reason justifies it.

1. Reflexive: $m\angle B = m\angle B$

2. Symmetric: If $MN = 5$, then $5 = MN$

3. Transitive: If $\overline{AB} \cong \overline{BC}$; $\overline{BC} \cong \overline{EF}$, then $\overline{AB} \cong \overline{EF}$

4. Multiplication: If $\frac{x}{5} = 2$, then $x = 10$

5. Distributive: $2(x + y) = 2x + 2y$

6. Addition: If $2x - 3 = 10$, then $2x = 13$

7. Substitution: If $2x + y = 70$, and $y = 3x$, then $2x + 3x = 70$.

8. Division: If $8x = 88$, then $x = 11$

9. Subtraction: If $AB + RS = CD + RS$, then $AB = CD$

10. Reflexive: $\overline{XY} \cong \overline{XY}$